

CHAPTER 2

DESCRIPTION OF THE UPPER CUMBERLAND RIVER WATERSHED

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2.1. BACKGROUND. In 1748, an Englishman named Dr. Thomas Walker led a party of hunters across the Appalachian Mountains from Virginia. Walker was an explorer and surveyor of renown, and is described as a man of mark among the pioneers. They gave the name "Cumberland" to the lofty range of mountains they crossed, in honor of the Duke of Cumberland, a picturesque region of lakes and mountains in the northern England. Walker's party pursued their journey by way of the Cumberland Gap into what is today Tennessee. Finding a beautiful mountain stream flowing across their course they called it the "Cumberland River." Previous to this time, the Cumberland River had been called Warioto by the natives and Shauvanon by the French traders. The river's upper course flows through the rugged, forested coal-mining region of Southeastern Kentucky and Northeastern Tennessee.

This Chapter describes the location and characteristics of the Upper Cumberland River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Tennessee portion of the Upper Cumberland River Watershed is located in Middle and East Tennessee and includes parts of Clay and Pickett Counties.

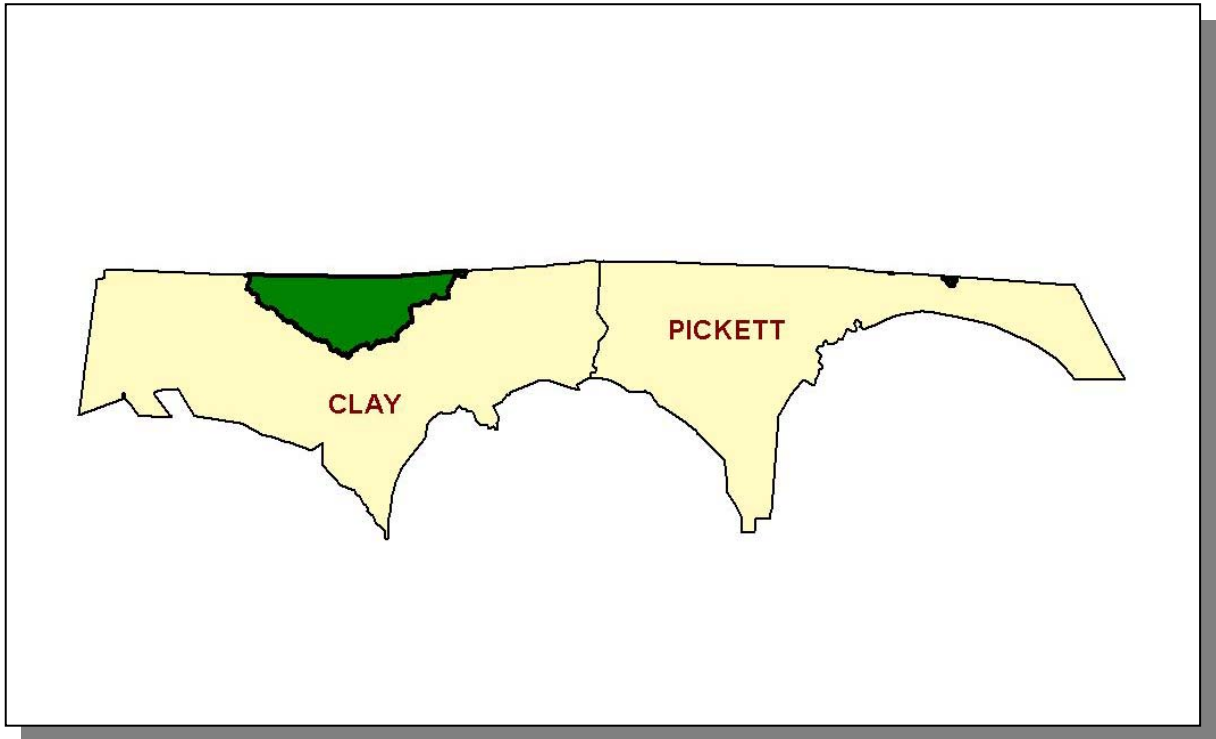


Figure 2-1. General Location of the Tennessee Portion of the Upper Cumberland River Watershed.

COUNTY	% OF WATERSHED IN EACH COUNTY
Clay	100

Table 2-1. The Tennessee Portion of the Upper Cumberland River Watershed is Located Within One Middle Tennessee County.

2.2.B. Population Density Centers. Three highways serve the major communities in the Tennessee portion of the Upper Cumberland River Watershed.

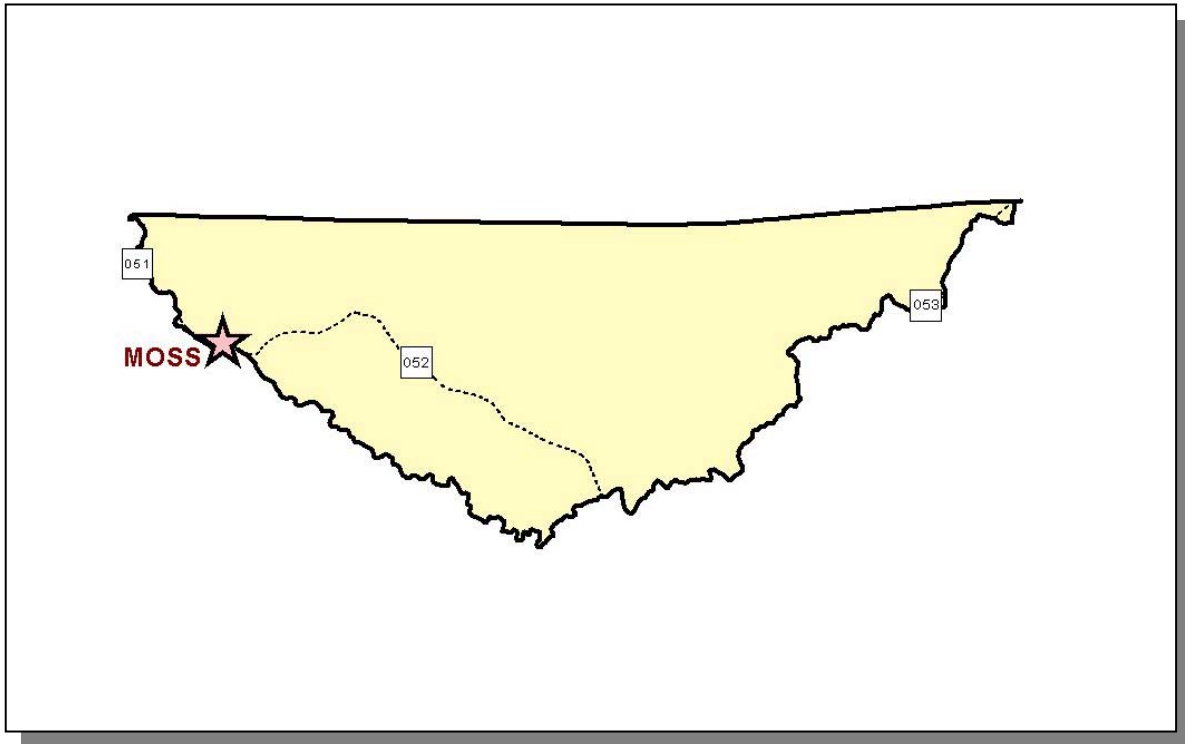


Figure 2-2. Communities and Roads in the Tennessee Portion of the Upper Cumberland River Watershed.

MUNICIPALITY	POPULATION	COUNTY
Moss	1,163	

Table 2-2. Municipalities in the Tennessee Portion of the Upper Cumberland River Watershed. Population based on 1996 census (Tennessee Blue Book).

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Upper Cumberland River Watershed, designated 05130103 by the USGS, is approximately 1,823 square miles (34 square miles in Tennessee) and drains to the Cumberland River.

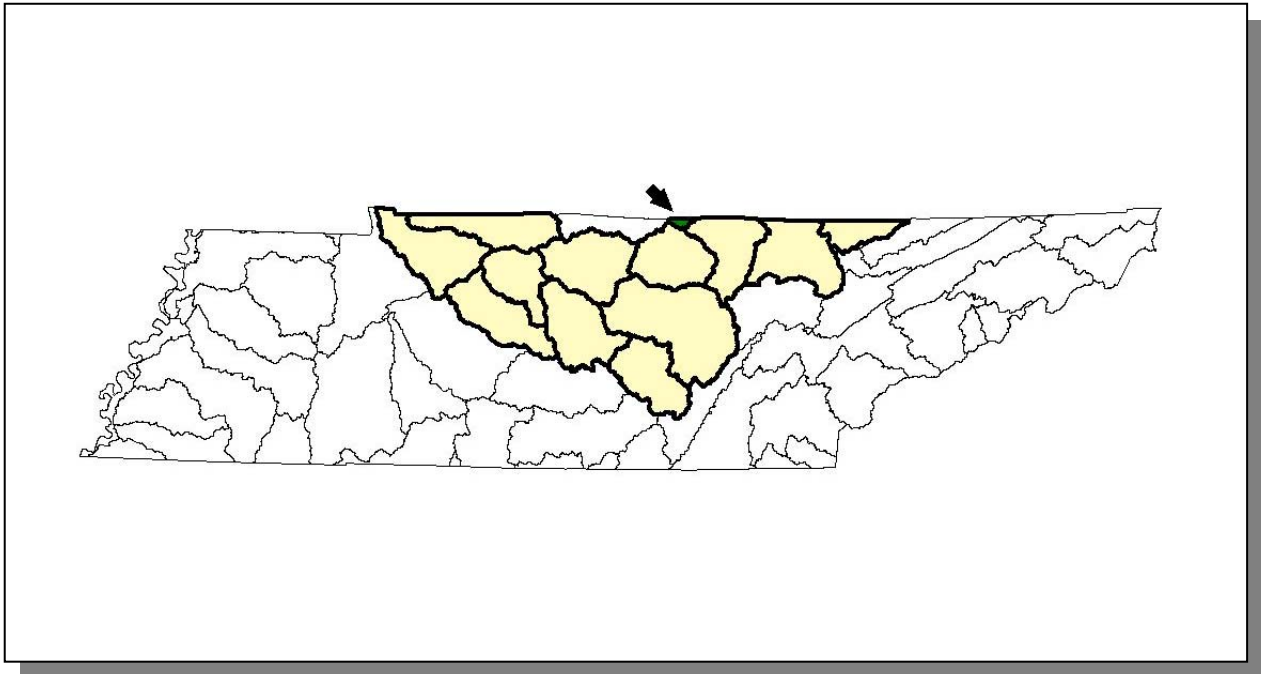


Figure 2-3. The Upper Cumberland River Watershed is Part of the Cumberland River Basin.

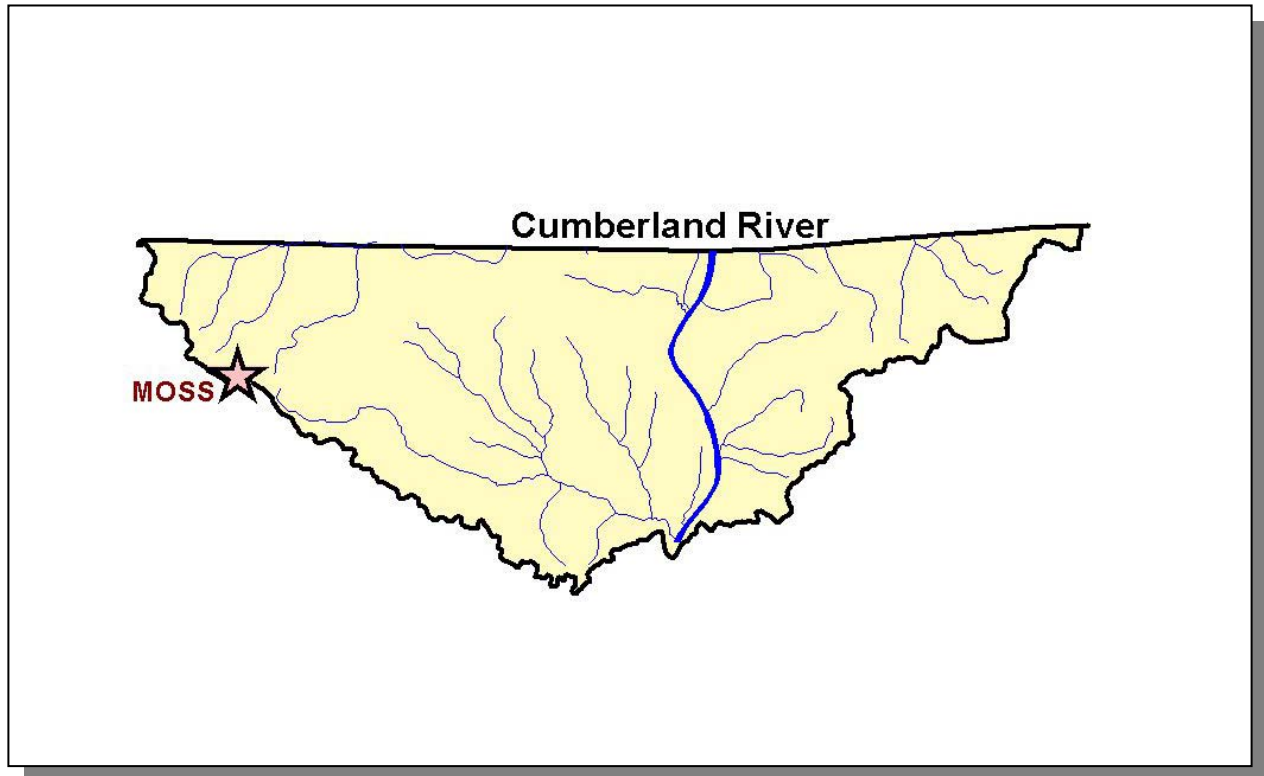


Figure 2-4. Hydrology in the Tennessee Portion of the Upper Cumberland River Watershed. There are 52.2 stream miles recorded in River Reach File 3 in the Upper Cumberland River Watershed. Location of the Cumberland River and the city of Moss are shown for reference.

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2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

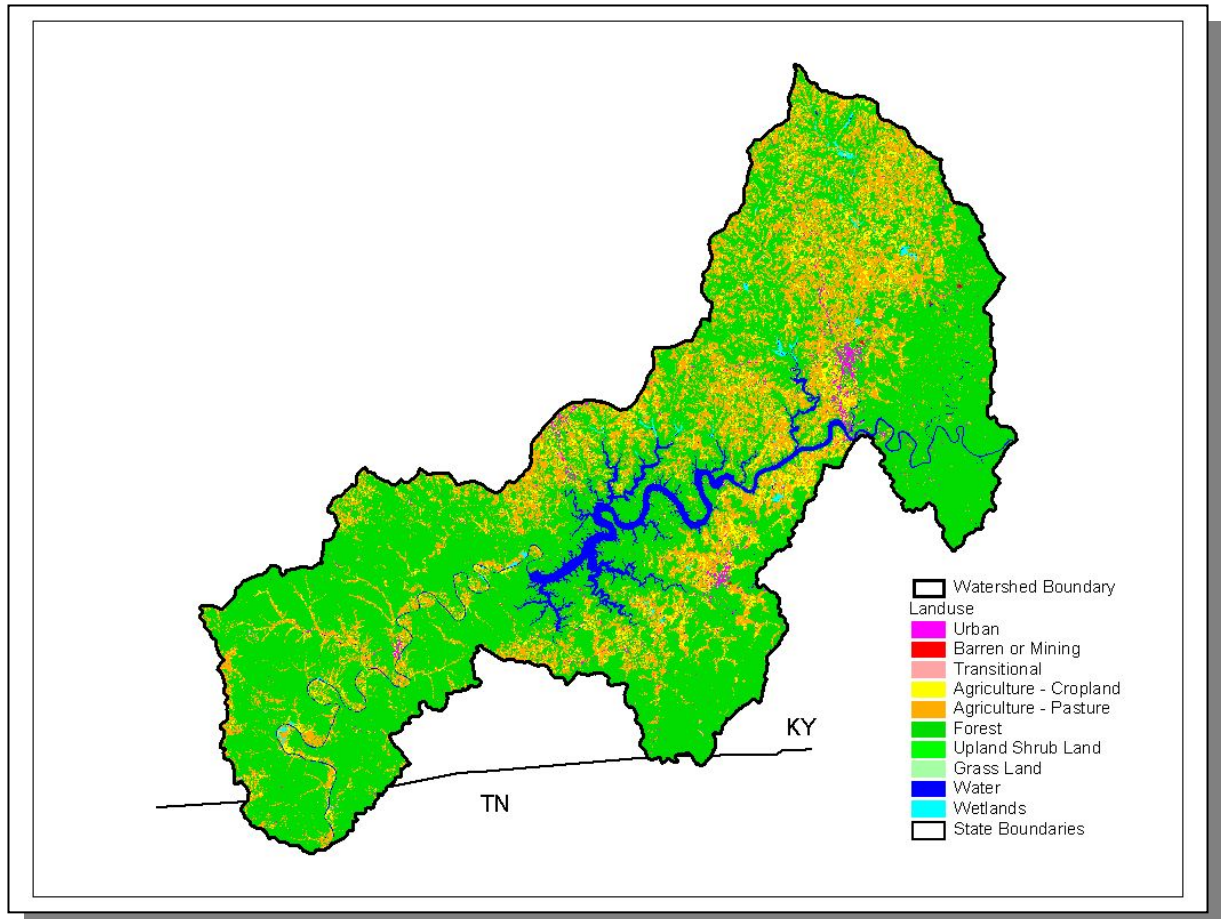


Figure 2-5. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

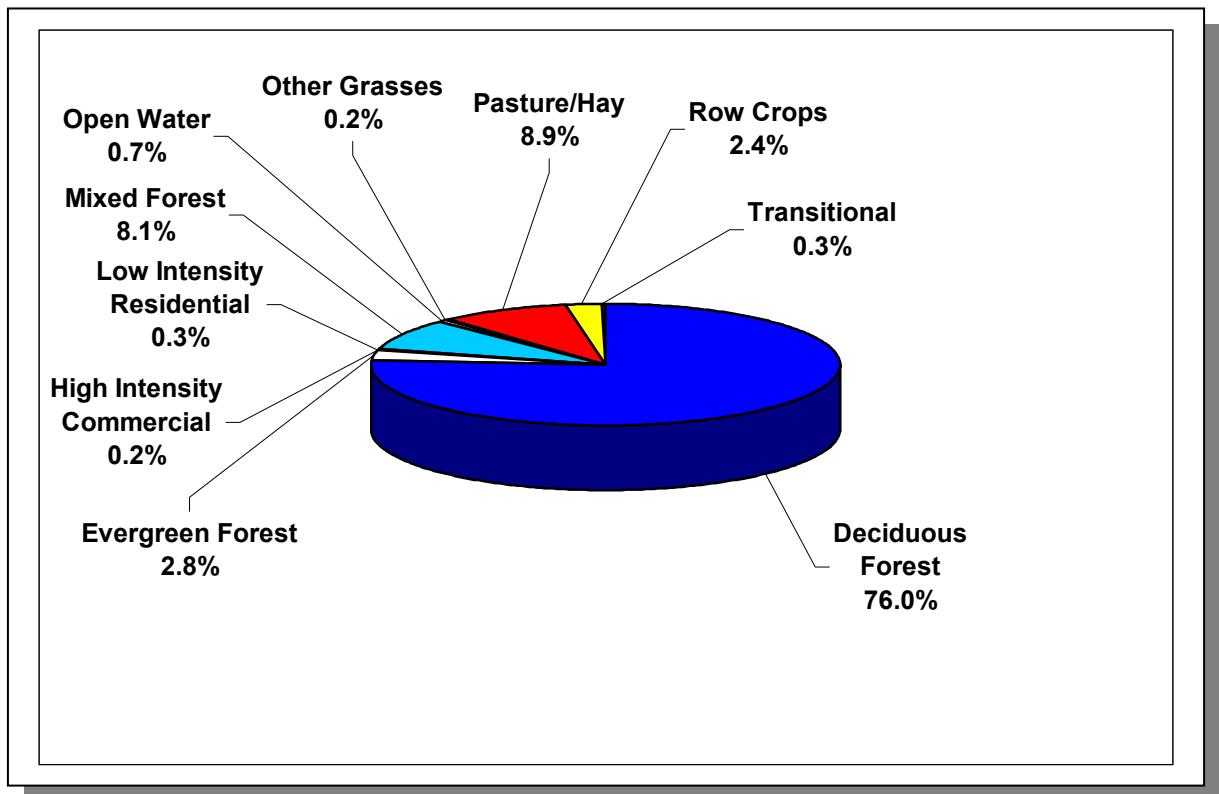


Figure 2-6. Land Use Distribution in the Tennessee Portion of the Upper Cumberland River Watershed. More information is provided in Appendix II.

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Sinkholes, springs, disappearing streams and caves characterize karst topography. The term “karst” describes a distinctive landform that indicates dissolution of underlying soluble rocks by surface water or ground water. Although commonly associated with limestone and dolomite (carbonate rocks), other highly soluble rocks such as gypsum and rock salt can be sculpted into karst terrain. In karst areas, the ground water flows through solution-enlarged channels, bedding planes and microfractures within the rock. The characteristic landforms of karst regions are: closed depressions of various size and arrangement; disrupted surface drainage; and caves and underground drainage systems. The term “karst” is named after a famous region in the former country of Yugoslavia.

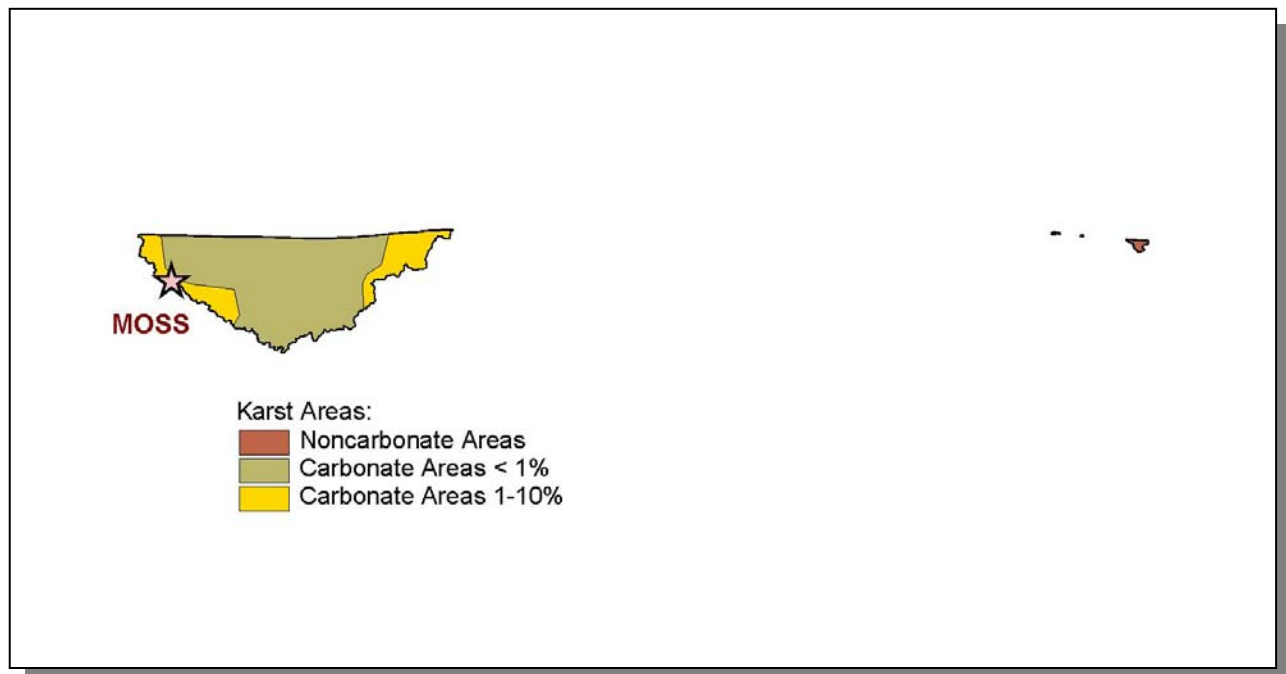


Figure 2-7. Illustration of Karst Areas in the Tennessee Portion of the Upper Cumberland River Watershed. Locations of communities in the watershed are shown for reference.

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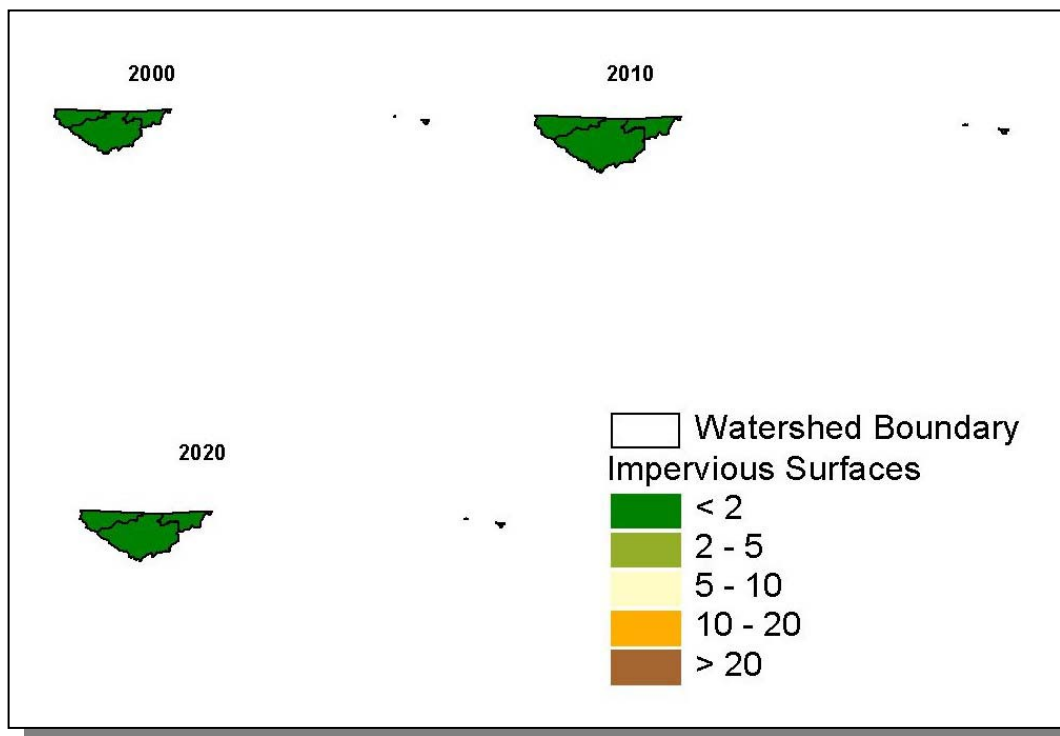


Figure 2-8. Illustration of Total Impervious Area in the Tennessee Portion of the Upper Cumberland River Watershed. All HUC-12 subwatersheds are shown. Current and projected total impervious cover is provided by EPA Region 4. More information can be found at: <http://www.epa.gov/ATHENS/research/impervious/>

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Tennessee portion of the Upper Cumberland River Watershed lies within 1 Level III ecoregion (Interior Plateau) and contains 2 Level IV subecoregions:

- The **Eastern Highland Rim (71g)** has level terrain, with landforms characterized as tablelands of moderate relief and irregular plains. Mississippian-age limestone, chert, shale, and dolomite predominate, and karst terrain sinkholes and depressions are especially noticeable between Sparta and McMinnville. Numerous springs and spring-associated fish fauna also typify the region. Natural vegetation for the region is transitional between the oak-hickory type to the west and the mixed mesophytic forests of the Appalachian ecoregions (68, 69) to the east. Bottomland hardwood forest has been inundated by several large impoundments. Barrens and former prairie areas are now mostly oak thickets or pasture and cropland.
- **Outer Nashville Basin (71h)** is a more heterogeneous region than the Inner Nashville Basin, with more rolling and hilly topography and slightly higher elevations. The region encompasses most all of the outer areas of the generally non-cherty Ordovician limestone bedrock. The higher hills and knobs are capped by the more cherty Mississippian-age formations, and some Devonian-age Chattanooga shale, remnants of the Highland Rim. The region's limestone rocks and soils are high in phosphorus, and commercial phosphate is mined. Deciduous forests with pasture and cropland are the dominant land covers. Streams are low to moderate gradient, with productive nutrient-rich waters, resulting in algae, rooted vegetation, and occasionally high densities of fish. The Nashville Basin as a whole has a distinctive fish fauna, notable for fish that avoid the region, as well as those that are present.

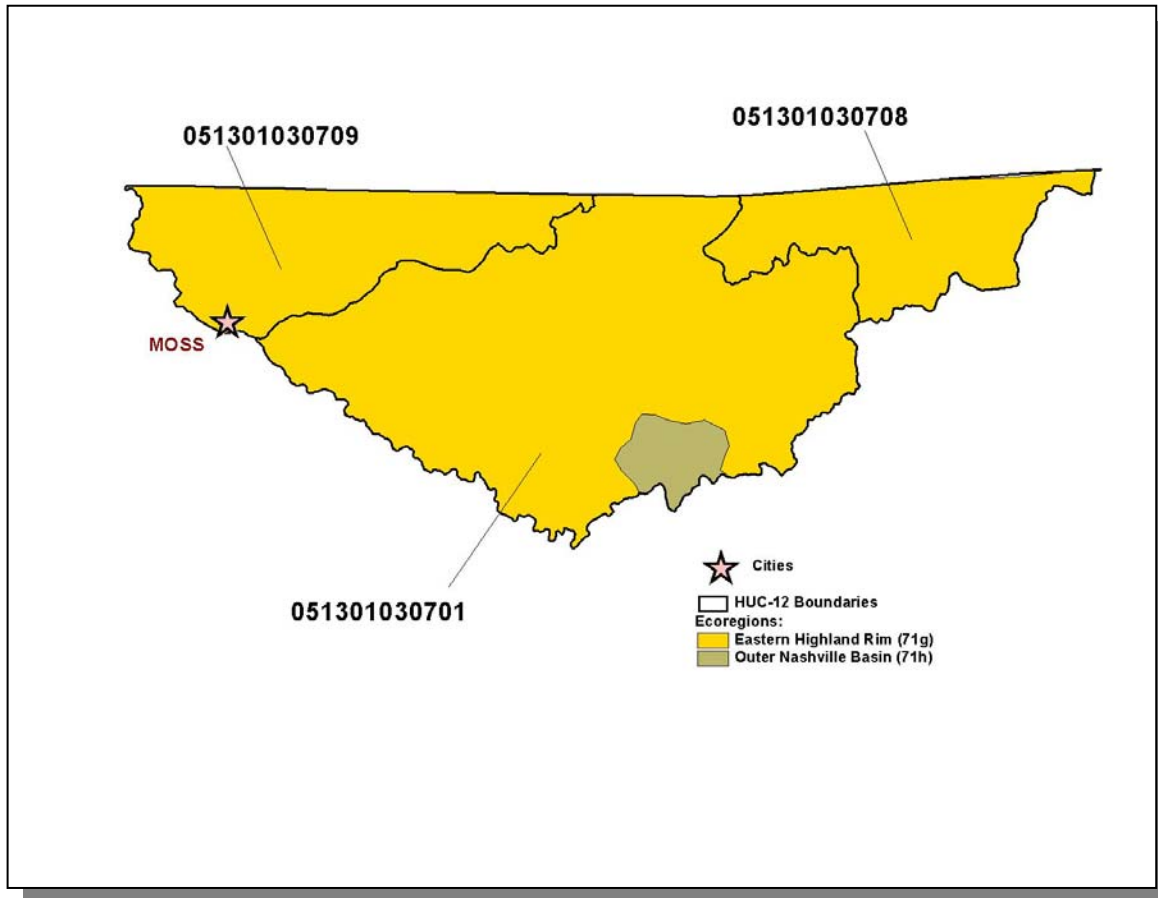


Figure 2-9. Level IV Ecoregions in the Tennessee Portion of the Upper Cumberland River Watershed. Location of Moss is shown for reference.

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

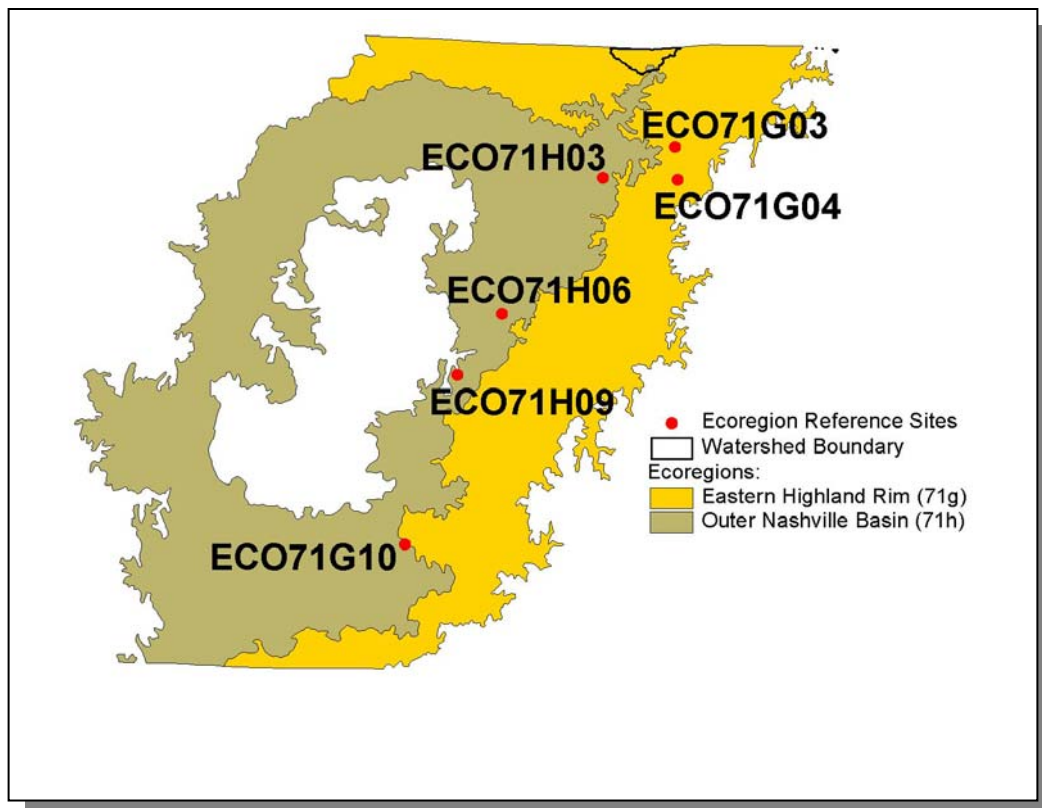


Figure 2-10. Ecoregion Monitoring Sites in Level IV Ecoregions 71g and 71h. The Tennessee portion of the Upper Cumberland River Watershed is shown for reference. More information, including which ecoregion reference sites were inactive or dropped prior to 01/01/2006, is provided in Appendix II.

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Insects	1
Amphibians	2
Birds	3
Fish	6
Mammals	9
Plants	12
Total	33

Table 2-3. There are 33 Known Rare Plant and Animal Species in the Tennessee Portion of the Upper Cumberland River Watershed.

In the Tennessee portion of the Upper Cumberland River Watershed, there are six known rare fish species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
<i>Etheostoma baileyi</i>	Emerald darter		D
<i>Etheostoma sagitta</i>	Arrow darter		D
<i>Etheostoma susanae</i>	Cumberland Johnny darter	C	E
<i>Notropis buccatus</i>	Silverjaw minnow		T
<i>Notropis rubellus rubellus</i>	Rosyface shiner		D
<i>Phoxinus cumberlandensis</i>	Blackside dace	LT	T

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the Upper Cumberland River Watershed. Federal Status: LT, Listed Threatened by the U.S. Fish and Wildlife Service; C, Candidate species for listing by the U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; T, Listed Threatened by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at <http://www.state.tn.us/environment/na/>.

2.7. CULTURAL RESOURCES.

2.7.C. Public Lands. Some sites representative of the cultural heritage are under state or federal protection:

- Pickett State Forest is an 18,085-acre tract designated as a state forest in 1935, after the Sterns Coal and Lumber Company donated the land in 1933. More information may be found at <http://www.state.tn.us/agriculture/forestry/stateforests/10.html>
- Pickett State Forest Wildlife Management Area is a 11,000-acre area managed by TWRA in Pickett County.

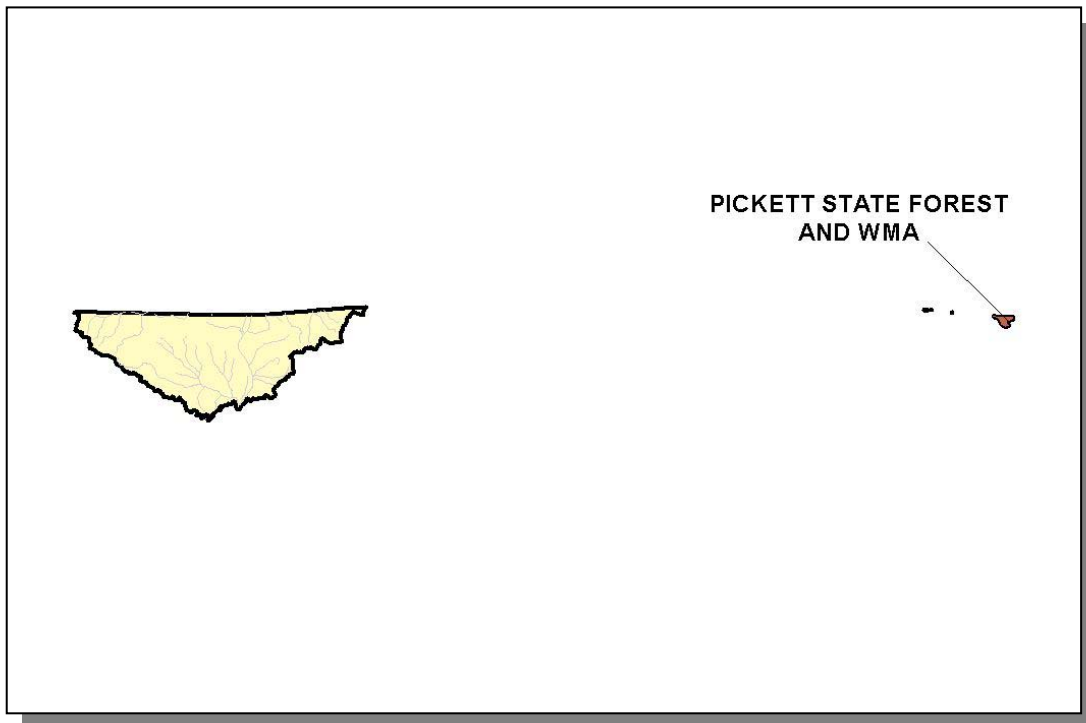


Figure 2-11. Public Lands in the Tennessee Portion of the Upper Cumberland River Watershed. Data are from Tennessee Wildlife Resources Agency. WMA, Wildlife Management Area.

2.8. TENNESSEE RIVERS ASSESSMENT PROJECT. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

<http://www.state.tn.us/environment/wpc/publications/riv/>

STREAM	NSQ	RB	RF	STREAM	NSQ	RB	RF
Cumberland River	2	2	1	McFarland Creek	2		1
Kettle Creek	3			Proctor Creek	3		

Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed